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Costs Estimates for Control of Combined Sewer Discharge to Marine Bays and Estuaries Addendum to 1982 Needs Survey

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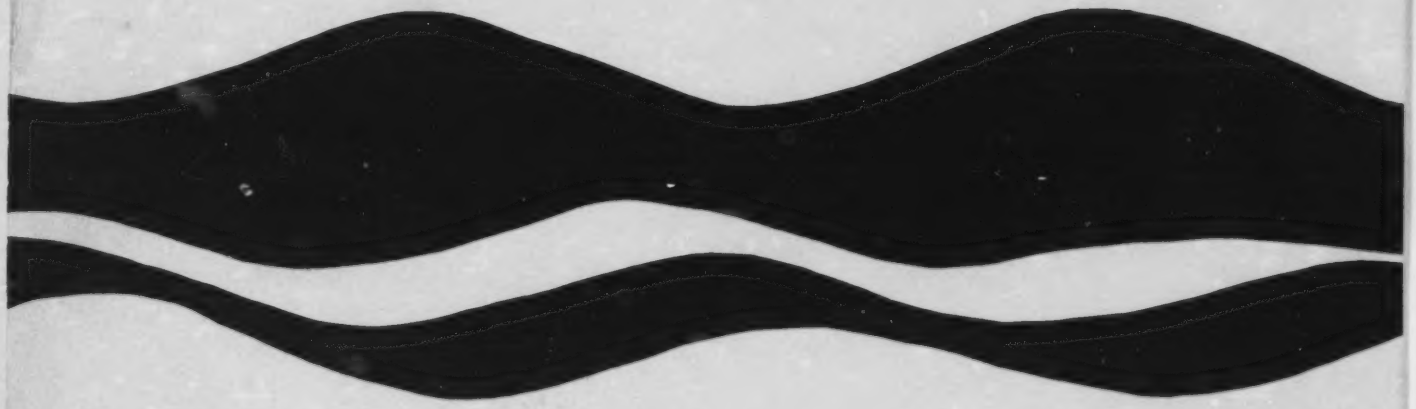
Addendum to 1982 Needs Survey:

Cost Estimates for Control of Combined Sewer Discharge to Marine Bays and Estuaries



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ADDENDUM TO

THE 1982 NEEDS SURVEY

COST ESTIMATES FOR CONTROL OF COMBINED SEWER DISCHARGE TO MARINE BAYS AND ESTUARIES

March 1, 1983

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ADDENDUM TO THE 1982 NEEDS SURVEY

COST ESTIMATES FOR CONTROL OF COMBINED SEWER DISCHARGE TO MARINE BAYS AND ESTUARIES

I. PURPOSE AND SCOPE

This report is submitted in compliance with Amendment 29 of the Conference Report on the FY 1983 Appropriations for HUD and Independent Agencies (Conference Report No. 92-549, Public Law 97-272). This legislation also appropriated $30 million for control of combined sewer overflows (CSOs) affecting marine waters. The separate marine CSO fund was authorized in section 201(n)(2) of the Clean Water Act, enacted as a part of the Municipal Wastewater Treatment Construction Grant Amendments of 1981(P.L. 97-117). Section 201(n)(2) states in part that:

> "...the Administrator shall have available...funds...to address water quality problems of marine bays and estuaries subject to lower levels of water quality due to the impacts of discharges from combined storm water and sanitary sewer overflows from adjacent urban complexes..."

This report is presented as an addendum to the 1982 Needs Survey submitted to Congress on December 31, 1982. The 1982 Needs Survey considered all categories of need for construction of publicly-owned wastewater treatment facilities including all Category V (CSO) needs on a State-by-State basis. This addendum, extracted entirely from the 1982 Needs Survey data-of-record, presents a list of combined sewer facilities discharging to or affecting the tidally-influenced coastal waters of bays and estuaries and their estimated CSO control costs. The list is based on a careful map inspection and a review of State water quality standards and other available Needs Survey documentation.

The marine bays and estuary waters described in this report are not the same as "marine waters" defined for the 301(h) program for waiver of secondary treatment requirements for marine waters. The legislative history (Conference Report Nos. 97-408, 97-720) for the separate marine CSO fund recognizes this distinction and requires that each grant application for a CSO project be supported by a demonstration of shellfish and swimming benefits. Every facility on the list presented in this addendum is not necessarily eligible for funding from the separate marine CSO correction fund. Since all tidally-influenced waters are not necessarily marine, the determination of whether a tidal water is actually marine will depend on a rigorous case-by-case analysis of site specific factors. As a requirement for Federal funding, each grant application for a proposed marine CSO project will be individually reviewed and must meet criteria in sections 35.2024(b)(2) and (3) of the Construction Grant Regulation (Title 40 of the Code of Federal Regulations (CFR)). Since the final eligibility determination for funding from the marine CSO fund depends on individual reviews of grant applications, CSO facility needs for marine bays and estuaries are referred to in this report as potential CSO facility needs for marine bays and estuaries.

The Construction Grant Regulation requires the Administrator to establish priorities for project applications with demonstrated water quality benefits based upon the following criteria:

(1) Extent of water use benefits that would result, including swimming and shellfishing;

(2) Relationship of water quality improvements to project costs; and

(3) National or regional significance.

EPA will soon publish procedural and technical guidance on marine CSO applications and the demonstration of water quality benefits.

The dollar needs for each facility and supporting information are reported in this addendum. Included are data related to the combined sewer system such as total area, population served, and the name of the municipality. Also provided is information on the receiving water such as the type of receiving water, the receiving water name, and the most stringent receiving water use objective.

All cost estimates reported here are expressed in January 1982 dollars.

II. NATIONAL SUMMARY OF NEEDS FOR CONTROL OF POTENTIAL MARINE CSO DISCHARGE

Seventeen States have a total of 115 combined sewer facilities affecting the tidal waters of bays and estuaries that are potentially marine. A CSO facility is defined as existing treatment works tributary to an area served by combined sewers designed to transport both stormwater and sanitary sewage. The total 115 CSO facilities serve 16.6 million people, 526,000 acres of urban land, and 1,869 overflow points. The CSO control needs for these facilities total about $11.6 billion.

Table A presents a national summary of State needs for control of potential marine CSO's; the total number of CSO points, combined sewer area and 1980 population served in each State; and the total Category V needs.

Nationally, only 10 percent of all CSO facilities affect potential marine bays and estuaries. However, these facilities account for about 31 percent of total Category V needs and 38 percent of the total population served by combined sewers. Three States (Massachusetts, New Jersey, and New York) have estimated marine CSO pollution control needs greater than $1 billion each.

Figure 1 illustrates the geographic distribution of the subject combined sewer facilities, while Figure 2 illustrates the geographic distribution of their CSO pollution abatement needs (in dollars).

Table A

NATIONAL SUMMARY OF POTENTIAL CSO POLLUTION CONTROL NEEDS FOR MARINE BAYS AND ESTUARIES

State	Number of CSO Points	Number of Combined Sewer Systems	Combined Sewer Area (acres)	1980 Population Served	Total Needs Estimate (in Thousands; January 1982 Dollars)
Alaska	2	2	324	4,860	$ 18,388
California	31	1	15,660	473,000	460,600
Connecticut	225	9	16,706	311,064	581,211
Delaware	53	4	8,426	88,668	290,836
District of Columbia	59	1	14,713	489,093	68,119
Georgia	1	1	135	18,210	4,492
Maine	128	17	20,809	133,240	385,228
Maryland	14	1	330	2,100	5,023
Massachusetts	201	13	44,033	1,285,890	1,140,045
New Hampshire	12	3	3,039	34,080	62,606
New Jersey	266	25	101,413	1,634,202	1,706,576
New York	322	18	203,269	9,226,386	5,270,712*
Oregon	12	2	1,320	5,796	16,951
Pennsylvania	207	2	47,513	1,962,102	804,015
Rhode Island	86	3	9,544	220,550	279,200
Virginia	61	3	11,364	417,815	208,562
Washington	107	10	27,377	246,862	289,715
U.S. TOTALS	1,869	115	525,975	16,553,918	11,592,279

*State of New York estimate includes an adjustment of $2.2 billion in the total Category V needs estimates reported in the 1982 Needs Survey from $5.6 billion to $7.8 billion for the State of New York and from $35.7 billion to $37.9 billion for the nation.

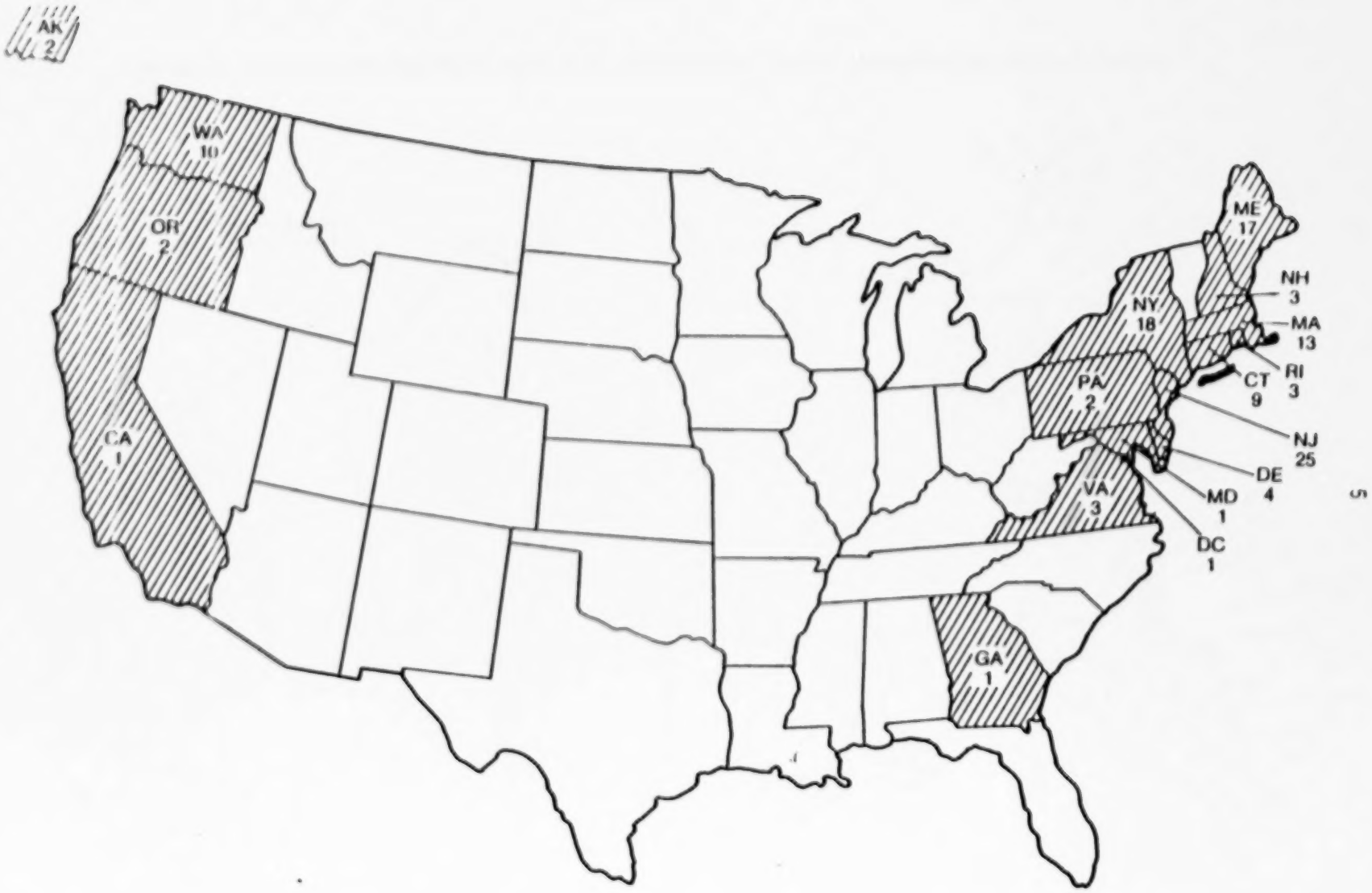

FIGURE 1. GEOGRAPHIC DISTRIBUTION OF POTENTIAL MARINE CSO FACILITIES

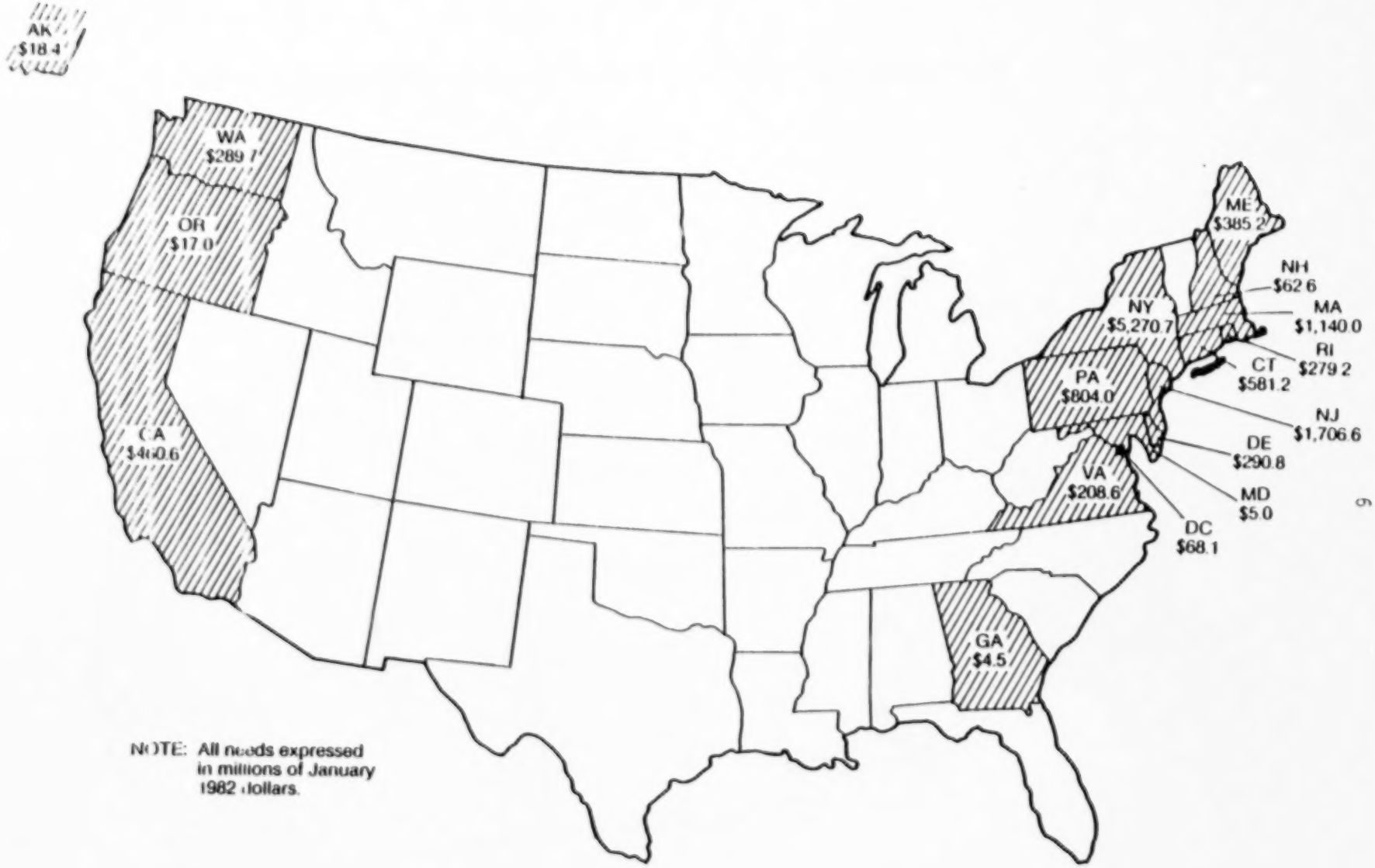

FIGURE 2. GEOGRAPHIC DISTRIBUTION OF ESTIMATED POTENTIAL MARINE CSO CONTROL NEEDS

.... FACILITY ESTIMATES OF POTENTIAL MARINE CSO CONTROL NEEDS

A. Introduction

This section presents the CSO pollution control needs for each of the 115 facilities potentially affecting marine bays and estuaries. The facility estimates and supporting data are grouped by State in alphabetical order and are reported in Tables 1 through 17 in Appendix A.

The needs estimates for about 92 percent (106 facilities) of the potential marine CSO facilities were developed using an automated needs estimation program. This program is summarized briefly in Appendix B of this addendum and described fully in Appendix A of the 1982 Needs Survey Report to Congress. Estimates for the remaining 8 percent (9 facilities) were taken from an available facilities plan or similar documents listed in Appendix C.

B. Facility Estimates

The first task in developing the facility needs estimate was to determine which of 1,084 combined sewer facilities in the United States discharge to potential marine bays and estuaries. This was accomplished in a three-step procedure. First, the 1982 Needs Survey inventory of combined sewers was searched to identify all facilities which discharge to tidally influenced bays and estuaries. Second, the 1982 Needs Survey stream use data was searched to determine which CSO areas were classified as tidal or marine by the State Water Quality standards. Finally, each facility with an uncertain classification was located on a USGS Hydrologic Unit Map. Map inspection indicated whether the receiving water is influenced by ocean tides. Appropriate corrections then were made to the 1982 Needs Survey data file. This procedure resulted in the identification of 17 States having 115 CSO facilities affecting tidal bays and estuaries that are potentially marine.

The tables in Appendix A are presented in two parts. Part A reports the location of the facility, the characteristics of the combined sewer service area as well as the estimated CSO control needs, and the basis for that estimate. Also reported in Part A is the general type of receiving water and the receiving water name.

Each facility appearing in Part A of Tables 1 through 17 is described as follows:

1. Authority/Facility Number. The authority/facility serving the combined sewer system.

2. Authority/Facility Name. The official name of the authority with major responsibility for operation of the combined sewer system.

3. City Name. The name of the city in which the combined sewer system is located.

4. Combined Sewer Area. The area (in acres) served directly by the combined sewer system.

5. Combined Sewer Population. Total number of people residing in the area drained directly by the combined sewer system.

6. Receiving Water Type. Physical classification of the receiving water according to general characteristics. Possible types are estuary/bay or ocean. Freshwater systems (i.e., streams and lakes) are not included in these tables.

7. Receiving Water Name. Name of major receiving water which is subject to periodic combined sewer overflow.

8. Needs. Estimated capital needs for CSO control in thousands of January 1982 dollars. These estimates are total remaining needs and include an allowance for planning and design as well as construction. The development of these needs estimates is discussed in Appendix B.

Part B of the tables presents details of the basis of estimates and the generic receiving water use. This information is provided because it was used in the needs estimation program. The estimation procedure involved four general steps: (1) identification of the major water body segment receiving CSOs in a metropolitan area; (2) identification of the State designated stream use classification(s) for the segment; (3) matching of each State stream use to a generic stream use; and (4) estimation of the level of CSO control needed to maintain the stream use.

Each designated item appearing in Part B of Tables 1 through 17 is defined as follows:

1. Authority/Facility Number. Same as Part A.

2. Basis of Estimate. Each Category V needs estimate is based either on a facilities plan or on the Category V needs estimation program (NEP). The needs estimation program estimates the cost of CSO control necessary to protect the State designated receiving water use and compares this cost to the alternative cost of sewer separation. The least cost alternative is then selected. The six possible basis of estimate are defined as follows:

   1. Aesthetics - NEP

   2. Public Health - NEP

   3. Fish and Wildlife - NEP

d. Recreation - NEP

e. Sewer Separation - NEP

f. Facility Plan

3. Limiting Generic Use. This is the general description of the most stringent receiving water use which controls the required level of CSO pollution control. The generic use is a function of the official State-designated Water Quality Standards.

APPENDIX A

STATE TABLES WITH FACILITY ESTIMATES OF POTENTIAL MARINE CSO NEEDS

1982 NEEDS SURVEY

MARCH 1, 1983
TABLE 1

ALASKA

PART A

ESTIMATE OF MARINE CSO CONTROL NEEDS

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
02-0102-001	JUNEAU, BOROUGH OF	JUNEAU	320	4,800	EST/BAY	GASTINEAU CHANNEL	10,161
02-0125-001	CORDOVA, CITY OF	CORDOVA	4	60	EST/BAY	PRINCE WILLIAM SOUND	227
STATE TOTALS			324	4,860			10,388

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
02-0102-001	RECREATION - NEP	SHELLFISH PROTECTION
02-0125-001	RECREATION - NEP	SHELLFISH PROTECTION

1982 NEEDS SURVEY

MARCH 1, 1983
TABLE 2

PART A — ESTIMATE OF MARINE CSO CONTROL NEEDS — CALIFORNIA

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
06-2032-002	SAN FRANCISCO CITY	SAN FRANCISCO	15,660	473,000	EST/BAY	SAN FRANCISCO BAY	460,600
STATE TOTALS			15,660	473,000			460,600

PART B — DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
06-2032-002	FACILITY PLAN	SHELLFISH PROTECTION

1982 NEEDS SURVEY

MARCH 1, 1983
TABLE 3

CONNECTICUT

ESTIMATE OF MARINE CSO CONTROL NEEDS

PART A

AUTHORITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
09-0150 001	BRIDGEPORT CITY OF	BRIDGEPORT	3,380	50,000	EST/BAY	BRIDGEPORT HARBOR	114,000
09-0170 001	DERBY CITY	DERBY	300	11,000	EST/BAY	HOUSATONIC R	11,550
09-0641 001	MDC HARTFORD	HARTFORD	2,992	110,000	EST/BAY	CONNECTICUT R	146,862
09-0830 001	MIDDLETOWN TOWN	MIDDLETOWN	850	8,014	EST/BAY	CONNECTICUT RIVER	17,316
09-0930 001	NEW HAVEN CITY OF	NEW HAVEN	3,658	84,300	EST/BAY	NEW HAVEN HARBOR	174,302
09-1030 001	NORWALK TOWN OF	NORWALK	525	15,800	EST/BAY	NORWALK HARBOR	33,605
09-1040 001	NORWICH CITY OF	NORWICH	4,000	23,000	EST/BAY	THAMES R	63,480
09-1130 001	PORTLAND TOWN OF	PORTLAND	21	150	EST/BAY	CONNECTICUT RIVER	393
09-1260 001	SHELTON CITY OF	SHELTON	980	8,800	EST/BAY	HOUSATONIC RIVER	19,673
STATE TOTALS			16,706	311,064			581,211

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
09-0150-001	FACILITY PLAN	SHELLFISH PROTECTION
09-0370-001	RECREATION - NEP	SHELLFISH PROTECTION
09-0641-001	RECREATION - NEP	SHELLFISH PROTECTION
09-0830-001	RECREATION - NEP	FULL BODY CONTACT (REC.)
09-0930-001	RECREATION - NEP	SHELLFISH PROTECTION
09-1030-001	RECREATION - NEP	SHELLFISH PROTECTION
09-1040-001	RECREATION - NEP	SHELLFISH PROTECTION
09-1130-001	RECREATION - NEP	SHELLFISH PROTECTION
09-1260-001	RECREATION - NEP	SHELLFISH PROTECTION

1982 NEEDS SURVEY

MARCH 1, 1983
TABLE 4

DELAWARE

PART A ESTIMATE OF MARINE CSO CONTROL NEEDS

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
10-0009-001	SEAFORD CITY OF	SEAFORD	240	600	EST/BAY	NANTICOKE RIVER	2,411
10-0017-001	MILFORD CITY OF	MILFORD	350	4,860	EST/BAY	MISPILLION RIVER	8,111
10-0018-001	LEWES SEWERAGE SYS	LEWES	900	2,620	EST/BAY	LEWIS RENOBOTH CANAL	10,959
10-0027-001	WILMINGTON W P C F	WILMINGTON	6,936	80,368	EST/BAY	BRANDYWINE CREEK	269,355
STATE TOTALS			8,426	88,668			290,836

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
10-0009-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
10-0017-001	RECREATION - NEP	SHELLFISH PROTECTION
10-0018-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
10-0027-001	RECREATION - NEP	SHELLFISH PROTECTION

1982 NEEDS SURVEY

DIST. OF COLUMBIA

MARCH 1, 1982
TABLE 5

PART A

ESTIMATE OF MARINE CSO CONTROL NEEDS

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
11-0001-001	DC DEPT ENVIR SERVS	WASHINGTON	14,713	489,093	EST/BAY	POTOMAC RIVER	60,119
STATE TOTALS			14,713	489,093			60,119

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
11-0001-001	FACILITY PLAN	AQUATIC FISH & WILDLIFE (GEN.)

1982 NEEDS SURVEY

MARCH 1, 1984
TABLE 6

PART A

GEORGIA

ESTIMATE OF MARINE CSO CONTROL NEEDS

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
13-0062-001	SAVANNAH,CITY OF	SAVANNAH	135	18,210	EST/BAY	VERNON RIVER	4,492
STATE TOTALS			135	18,210			4,492

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
13-0062-001	PUBLIC HEALTH - NEP	RAW DOMESTIC WATER SUPPLY

MAINE

PART A ESTIMATE OF MAINE C&D CONTROL NEEDS

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
23 0002-001	PORTLAND PWD	PORTLAND	4,775	58,000	EST/BAY	CASCO BAY	143,687
23 0003-001	SOUTH PORTLAND CITY	SOUTH PORTLAND	2,521	14,000	EST/BAY	CASCO BAY	75,965
23 0007-001	BIDDEFORD, CITY OF	BIDDEFORD	2,000	12,000	EST/BAY	SACO RIVER	35,209
23 0015-001	WESTBROOK PWD	WESTBROOK	482	3,500	EST/BAY	PRESUMPSCOT R	14,520
23 0017-001	SACO CITY OF	SACO	770	7,500	EST/BAY	SACO RIVER	15,423
23 0020-001	BAR HARBOR TOWN OF	BAR HARBOR	765	2,775	EST/BAY	FRENCHMAN BAY	10,396
23 0021-001	BATH CITY OF	BATH	1,700	9,500	EST/BAY	KENNEBEC ESTUARY	29,474
23 0022-001	BELFAST PWD	BELFAST	400	600	EST/BAY	ATLANTIC OCEAN	2,624
23 0046-001	KENNEBUNK SEWER DIST	KENNEBUNK	180	5,000	EST/BAY	MOUSAM RIVER	5,711
23 0051-001	MACHIAS TOWN OF	MACHIAS	250	3,000	EST/BAY	MACHIAS RIVER	5,374
23 0066-001	ROCKLAND CITY OF	ROCKLAND CITY OF	619	6,675	EST/BAY	ROCKLAND HARBOR	12,816
23 0097-001	EASTPORT CITY OF	EASTPORT	5,120	1,500	EST/BAY	COBSCOOK BAY	13,177
23 0112-001	CALAIS CITY OF	CALAIS	650	3,000	EST/BAY	ST CROIX R	10,859
23 0113-001	CAMDEN TOWN OF	CAMDEN	58	4,000	EST/BAY	PENOBSCOT BAY	3,394
23 0118-001	FALMOUTH TOWN OF	FALMOUTH	77	340	EST/BAY	CASCO BAY	1,247
23 0126-001	KITTERY, TOWN OF	KITTERY	410	1,100	EST/BAY	PISCATAQUA R	4,292
23 0147-001	THOMASTON TOWN OF	THOMASTON	32	750	EST/BAY	ST GEORGE RIVER	918
STATE TOTALS			20,809	133,240			385,226

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
23-0002-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
23-0003-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
23-0007-001	RECREATION - NEP	FULL BODY CONTACT (REC.)
23-0015-001	SEWER SEPARATION - NEP	FULL BODY CONTACT (REC.)
23-0017-001	RECREATION - NEP	FULL BODY CONTACT (REC.)
23-0020-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
23-0021-001	RECREATION - NEP	SHELLFISH PROTECTION
23-0022-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
23-0046-001	RECREATION - NEP	SHELLFISH PROTECTION
23-0051-001	RECREATION - NEP	SHELLFISH PROTECTION
23-0066-001	RECREATION - NEP	SHELLFISH PROTECTION
23-0097-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
23-0112-001	RECREATION - NEP	SHELLFISH PROTECTION
23-0113-001	RECREATION - NEP	SHELLFISH PROTECTION
23-0118-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
23-0126-001	SEWER SEPARATION - NEP	FULL BODY CONTACT (REC.)
23-0147-001	RECREATION - NEP	SHELLFISH PROTECTION

1982 NEEDS SURVEY

MARCH 1, 1983
TABLE 8

PART A — ESTIMATE OF MARINE CSO CONTROL NEEDS — MARYLAND

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
24-0046-001	CAMBRIDGE COMM UP	CAMBRIDGE	330	2,100	EST/BAY	CHOPTANK RIVER	5,023
STATE TOTALS			330	2,100			5,023

PART B — DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
24-0046-001	RECREATION - NEP	SHELLFISH PROTECTION

MASSACHUSETTS
ESTIMATE OF MARINE CSO CONTROL NEEDS

PART A

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
25-0002-001	LYNN CITY OF	LYNN	2,570	54,000	EST/BAY	LYNN HARBOUR	41,000
25-0038-001	HAVERHILL CITY OF	HAVERHILL	5,000	44,600	EST/BAY	MERRIMACK RIVER	108,269
25-0039-001	LAWRENCE CITY OF	LAWRENCE	3,200	45,000	EST/BAY	SPICKETT RIVER	120,505
25-0040-001	NEW BEDFORD CITY OF	NEW BEDFORD	4,500	104,000	EST/BAY	BUZZARDS BAY	126,789
25-0072-001	GLOUCESTER CITY OF	GLOUCESTER	300	15,500	EST/BAY	GLOUCESTER HARBOR	12,106
25-0075-001	HULL TOWN OF	HULL	233	4,500	EST/BAY	MASSACHUSETTS BAY	8,818
25-0090-001	CAMBRIDGE CITY OF	CAMBRIDGE	1,189	55,000	EST/BAY	CHARLES R	19,549
25-0091-001	FALL RIVER CITY OF	FALL RIVER	3,840	92,600	EST/BAY	MOUNT HOPE BAY	102,965
25-0101-001	AMESBURY TOWN OF	AMESBURY	500	8,800	EST/BAY	MERRIMACK RIVER	18,829
25-0105-001	CHELSEA CITY OF	CHELSEA	1,247	30,600	EST/BAY	MYSTIC R	24,307
25-0116-001	BROOKLINE TOWN OF	BROOKLINE	3,190	56,200	EST/BAY	CHARLES R	42,581
25-0120-001	METRO DIST COMM	BOSTON	17,017	692,200	EST/BAY	BOSTON HARBOR	330,000
25-0233-001	SOMERVILLE CITY OF	SOMERVILLE	1,247	80,890	EST/BAY	MYSTIC R	24,307
STATE TOTALS			44,033	1,285,890			1,140,045

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
25-0002-001	FACILITY PLAN	RECREATION (GEN.)
25-0038-001	RECREATION - NEP	SHELLFISH PROTECTION
25-0039-001	RECREATION - NEP	SHELLFISH PROTECTION
25-0040-001	RECREATION - NEP	SHELLFISH PROTECTION
25-0072-001	RECREATION - NEP	FULL BODY CONTACT (REC.)
25-0075-001	RECREATION - NEP	SHELLFISH PROTECTION
25-0090-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
25-0091-001	RECREATION - NEP	SHELLFISH PROTECTION
25-0101-001	RECREATION - NEP	SHELLFISH PROTECTION
25-0105-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
25-0116-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
25-0120-001	FACILITY PLAN	AQUATIC FISH & WILDLIFE (GEN.)
25-0233-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)

1982 NEEDS SURVEY

MARCH 1, 1982
TABLE 10

PART A

NEW HAMPSHIRE

ESTIMATE OF MARINE CSO CONTROL NEEDS

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
33-0076-001	DOVER BOARD OF SEWER	DOVER	500	9,000	EST/BAY	SQUAMSCOTT RIVER	12,512
33-0083-001	PORTSMOUTH CITY OF	PORTSMOUTH	1,389	16,000	EST/BAY	PISCATAQUA RIVER	28,863
33-0094-001	KITTERY CITY OF	KITTERY	1,150	9,000	EST/BAY	SALMON FALLS RIVER	21,231
STATE TOTALS			3,039	34,000			62,606

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
33-0076-001	RECREATION - NEP	SHELLFISH PROTECTION
33-0083-001	RECREATION - NEP	SHELLFISH PROTECTION
33-0094-001	RECREATION - NEP	SHELLFISH PROTECTION

NEW JERSEY

ESTIMATE OF MARINE CSO CONTROL NEEDS

PART A

AUTHORITY / FACILITY NUMBER	NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
34-1005-001	BERGEN UTILITY AUTHO	LITTLE FERRY	20,551	106,467	EST/BAY	HACKENSACK RIVER	350,871
34-1049-001	JERSEY CITY SA-WEST	JERSEY CITY	6,582	23,532	EST/BAY	NEWARK BAY	101,516
34-1062-001	PASSAIC VALLEY SEW	NEWARK	25,781	299,615	EST/BAY	UPPER NEW YORK BAY	397,623
34-1090-001	RAHWAY VALLEY SEW AU	RAHWAY	435	31,000	EST/BAY	ARTHUR KILL	6,401
34-1133-001	D P W&S CITY BAYONNE	BAYONNE	2,500	72,000	EST/BAY	KILL VAN KULL	38,558
34-1158-001	CANTERET BORO OF	CANTERET	1,682	23,000	EST/BAY	ARTHUR KILL	53,888
34-1168-002	CLIFFSIDE PARK BORO	CLIFFSIDE PARK	405	14,578	EST/BAY	HUDSON RIVER	6,296
34-1185-001	E NEWARK BORO OF	EAST NEWARK	59	1,922	EST/BAY	NEW YORK BAY	930
34-1187-001	EDGEWATER BORO OF	EDGEWATER	618	5,551	EST/BAY	HUDSON RIVER	9,532
34-1190-001	ELIZABETH CITY OF	ELIZABETH	4,118	106,200	EST/BAY	ELIZABETH RIVER	63,513
34-1222-001	GUTTENBERG TOWN OF	GUTTENBERG	104	7,340	EST/BAY	HUDSON RIVER	1,604
34-1235-001	HARRISON TOWN OF	HARRISON	1,046	11,079	EST/BAY	NEW YORK BAY	16,133
34-1245-001	HOBOKEN CITY	HOBOKEN	400	83,120	EST/BAY	HUDSON RIVER	6,169
34-1255-002	TOWN OF KEARNY	SOUTH KEARNY	4,476	19,000	EST/BAY	HACKENSACK RIVER	143,376
34-1266-001	LINDEN CITY OF	LINDEN	945	37,836	EST/BAY	ARTHUR KILL	14,577
34-1116-002	NEWARK CITY OF	NEWARK	14,440	381,930	EST/BAY	NEW YORK BAY	222,712
34-1124-001	NORTH BERGEN TWP	NORTH BERGEN	3,114	5,017	EST/BAY	HACKENSACK RIVER	48,028
34-1124-002	NORTH BERGEN TWP	NORTH BERGEN	19	2,360	EST/BAY	HACKENSACK RIVER	299
34-1124-003	NORTH BERGEN TWP	GUTTENBERG	175	18,551	EST/BAY	HUDSON RIVER	5,606
34-1356-001	PERTH AMBOY CITY OF	PERTH AMBOY	2,722	40,000	EST/BAY	RARITAN RIVER	41,962
34-1425-001	UNION CITY SA	UNION	712	6,953	EST/BAY	HUDSON RIVER	10,961
34-1447-001	WEEHAWKEN TWP	WEEHAWKEN	595	32,983	EST/BAY	HUDSON RIVER	9,172
34-1453-001	WEST NY SUB STP	WEST NEW YORK	792	39,194	EST/BAY	HUDSON RIVER	12,215
34-1474-001	JERSEY CITY SA-EAST	JERSEY CITY	8,960	223,532	EST/BAY	HUDSON RIVER	138,193
34-2217-001	NEW BRUNSWICK CITY	NEW BRUNSWICK	202	41,442	EST/BAY	LOWER RARITAN RIVER	6,471
STATE TOTALS			101,413	1,634,202			1,706,576

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
34-1005-001	RECREATION - NEP	SHELLFISH PROTECTION
34-1049-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1062-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1090-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1133-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1158-001	RECREATION - NEP	FULL BODY CONTACT (REC.)
34-1168-002	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1185-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1187-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1190-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1222-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1235-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1245-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1255-002	RECREATION - NEP	SHELLFISH PROTECTION
34-1266-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1116-002	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1124-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1124-002	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1124-003	RECREATION - NEP	FULL BODY CONTACT (REC.)
34-1356-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1425-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1447-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1453-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-1474-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
34-2217-001	RECREATION - NEP	SHELLFISH PROTECTION

PART A — ESTIMATE OF MARINE CSO CONTROL NEEDS — NEW YORK

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
36-2001-001	BUREAU OF WPC	NEW YORK	16,719	1,037,900	EST/BAY	UPPER EAST RIVER	249,109
36-2001-002	BUREAU OF WPC	HUNTS POINT	17,800	620,500	EST/BAY	UPPER EAST RIVER	564,965
36-2001-003	BUREAU OF WPC DPT WR	ASTORIA	16,400	691,500	EST/BAY	UPPER EAST RIVER	520,530
36-2001-004	BUREAU OF WPC	NEW YORK	15,980	320,595	EST/BAY	EAST RIVER	507,199
36-2001-005	BUREAU OF WPC	NEW YORK	23,432	465,203	EST/BAY	JAMAICA BAY	743,723
36-2001-006	BUREAU OF WPC DPT WR	BROOKLYN	5,700	275,500	EST/BAY	HENDRIX CREEK	180,916
36-2001-007	BUREAU OF WPC DPT WR	BROOKLYN	3,500	2,400,300	EST/BAY	EAST RIVER	46,592
36-2001-008	BUREAU OF WPC DPT WR	STATEN ISLAND	15,000	190,800	EST/BAY	EAST RIVER	476,094
36-2001-009	BUREAU OF WPC DPT WR	BROOKLYN	14,200	621,000	EST/BAY	ROCKAWAY INLET	450,701
36-2001-010	BUREAU OF WPC DPT WR	BROOKLYN	12,640	664,600	EST/BAY	UPPER BAY	868,265
36-2001-011	BUREAU OF WPC DPT WR	QUEENS	16,300	955,200	EST/BAY	EAST RIVER	216,907
36-2001-012	BUREAU OF WPC	NEW YORK	6,015	449,900	EST/BAY	HUDSON RIVER	80,072
36-2001-013	BUREAU OF WPC	NEW YORK	21,943	149,764	EST/BAY	LOWER BAY	696,462
36-2001-014	BUREAU OF WPC	NEW YORK	5,500	110,200	EST/BAY	JAMAICA BAY	174,568
36-3002-001	BEACON	BEACON	3,400	11,200	EST/BAY	HUDSON RIVER	27,847
36-3019-001	POUGHKEEPSIE CITY OF	POUGHKEEPSIE	2,300	49,139	EST/BAY	HUDSON RIVER	41,979
36-3056-001	NEWBURGH CITY OF	NEWBURG	2,140	26,273	EST/BAY	HUDSON RIVER	51,620
36-3117-001	YONKERS DPW	YONKERS	2,300	184,812	EST/BAY	HUDSON RIVER	73,001
STATE TOTALS			203,269	9,226,386			5,270,714

PART B — DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
36-2001-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
36-2001-002	RECREATION - NEP	RECREATION (GEN.)
36-2001-003	RECREATION - NEP	RECREATION (GEN.)
36-2001-004	RECREATION - NEP	RECREATION (GEN.)
36-2001-005	RECREATION - NEP	RECREATION (GEN.)
36-2001-006	RECREATION - NEP	RECREATION (GEN.)
36-2001-007	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
36-2001-008	RECREATION - NEP	RECREATION (GEN.)
36-2001-009	RECREATION - NEP	RECREATION (GEN.)
36-2001-010	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
36-2001-011	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
36-2001-012	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
36-2001-013	RECREATION - NEP	RECREATION (GEN.)
36-2001-014	RECREATION - NEP	RECREATION (GEN.)
36-3002-001	PUBLIC HEALTH - NEP	PARTIAL BODY CONTACT (REC.)
36-3019-001	PUBLIC HEALTH - NEP	RAW DOMESTIC WATER SUPPLY
36-3056-001	RECREATION - NEP	FULL BODY CONTACT (REC.)
36-3117-001	RECREATION - NEP	RECREATION (GEN.)

1982 NEEDS SURVEY

MARCH 1, 1983
TABLE 13

PART A

OREGON

ESTIMATE OF MARINE CSO CONTROL NEEDS

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
41-0055-001	COOS BAY CITY OF	COOS BAY CITY	410	3,553	EST/BAY	COOS BAY	7,999
41-0074-001	NORTH BEND CITY OF	NORTH BEND	910	2,243	EST/BAY	COOS BAY	8,952
STATE TOTALS			1,320	5,796			16,951

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
41-0055-001	RECREATION - NEP	FULL BODY CONTACT (REC.)
41-0074-001	SEWER SEPARATION - NEP	FULL BODY CONTACT (REC.)

1982 NEEDS SURVEY

MARCH 1, 1983
TABLE 14

PART A — ESTIMATE OF MARINE CSO CONTROL NEEDS

PENNSYLVANIA

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
42-0082-001	DELCORA	CHESTER	1,913	35,926	EST/BAY	DELAWARE RIV ESTUARY	25,392
42-0094-001	PHILADELPHIA WPC DIV	PHILADELPHIA	45,600	1,926,176	EST/BAY	DELAWARE RIVER	778,623
STATE TOTALS			47,513	1,962,102			804,015

PART B — DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
42-0082-001	FISH & WILDLIFE - NEP	WARM WATER FISHERY
42-0094-001	FISH & WILDLIFE - NEP	WARM WATER FISHERY

1982 NEEDS SURVEY

MARCH 1, 1983
TABLE 15

RHODE ISLAND

ESTIMATE OF MARINE CSO CONTROL NEEDS

PART A

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
44-0015-001	NEWPORT CITY OF	NEWPORT	0	30,000	EST/BAY	NEWPORT HARBOUR	13,200
44-0020-001	PAWTUCKET	PAWTUCKET	3,291	77,000	EST/BAY	BLACKSTONE R	119,000
44-0022-001	NARRAGAN. BAY WQMDC	PROVIDENCE	6,253	113,550	EST/BAY	PROVIDENCE R	147,000
STATE TOTALS			9,544	220,550			279,200

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
44-0015-001	FACILITY PLAN	FULL BODY CONTACT (REC.)
44-0020-001	FACILITY PLAN	SHELLFISH PROTECTION
44-0022-001	FACILITY PLAN	SHELLFISH PROTECTION

1982 NEEDS SURVEY

MARCH 1, 1983
TABLE 16

VIRGINIA

PART A ESTIMATE OF MARINE CSO CONTROL NEEDS

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
51-0101-001	RICHMOND STP	RICHMOND CITY	10,361	352,775	EST/BAY	JAMES RIVER	166,648
51-0302-001	NEWPORT NEWS WW C S	NEWPORT NEWS	268	51,600	EST/BAY	JAMES RIVER	27,774
51-0317-001	ALEXANDRIA CITY OF	ALEXANDRIA	735	13,440	EST/BAY	POTOMAC-RIVER	14,140
STATE TOTALS			11,364	417,815			208,562

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
51-0101-001	FISH & WILDLIFE - NEP	AQUATIC FISH & WILDLIFE (GEN.)
51-0302-001	RECREATION - NEP	SHELLFISH PROTECTION
51-0317-001	RECREATION - NEP	SHELLFISH PROTECTION

1980 NEEDS SURVEY

MARCH 1, 1981
TABLE 17

PART A

ESTIMATE OF MARINE CSO CONTROL NEEDS

WASHINGTON

AUTHORITY / FACILITY NUMBER	FACILITY NAME	CITY NAME	COMBINED SEWER AREA (AC.)	COMBINED SEWER POPULATION	RECEIVING WATER TYPE	RECEIVING WATER NAME	NEEDS ($ 1000)
53-0040-001	ANACORTES DEPT P. W.	ANACORTES	122	910	EST/BAY	GUEMES CHANNEL	2,269
53-0080-001	BELLINGHAM, CITY OF	BELLINGHAM	1,401	3,998	EST/BAY	BELLINGHAM BAY	15,599
53-0100-001	BLAINE WATER & SEWER	BLAINE WA 98230	300	814	EST/BAY	DRAYTON HARBOR	3,200
53-0115-001	BREMERTON, CITY OF	BREMERTON	1,932	9,616	EST/BAY	PUGET SOUND	33,027
53-0365-001	EDMONDS PWD	EDMONDS	2,400	21,600	EST/BAY	PUGET SOUND	49,361
53-0560-001	HOQUIAM, CITY OF	HOQUIAM	333	1,000	EST/BAY	CHEHALIS RIVER	1,874
53-0745-001	MARYSVILLE, CITY OF	MARYSVILLE	320	1,300	EST/BAY	EBEY SLOUGH	6,564
53-0776-002	METRO-SEATTLE	SEATTLE	19,000	195,000	EST/BAY	PUGET SOUND ET. AL.	142,000
53-0920-001	OLYMPIA, CITY OF	OLYMPIA	1,280	6,500	EST/BAY	BUDD INLET	25,759
53-0990-001	PORT ANGELES, CITY OF	PT ANGELES	289	6,116	EST/BAY	ST OF JUAN DE FUCA	8,002
STATE TOTALS			27,377	246,862			289,715

PART B DESIGNATED RECEIVING WATER USE & BASIS OF NEEDS ESTIMATE

AUTHORITY/FACILITY NUMBER	BASIS OF ESTIMATE	LIMITING GENERIC USE
53-0330-001	RECREATION - NEP	SHELLFISH PROTECTION
53-0080-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
53-0100-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
53-0115-001	RECREATION - NEP	SHELLFISH PROTECTION
53-0365-001	RECREATION - NEP	SHELLFISH PROTECTION
53-0560-001	SEWER SEPARATION - NEP	SHELLFISH PROTECTION
53-0745-001	RECREATION - NEP	SHELLFISH PROTECTION
53-0776-002	FACILITY PLAN	SHELLFISH PROTECTION
53-0920-001	RECREATION - NEP	SHELLFISH PROTECTION
53-0990-001	RECREATION - NEP	SHELLFISH PROTECTION

APPENDIX B

DEVELOPMENT OF 1982 CSO NEEDS ESTIMATE

APPENDIX B

DEVELOPMENT OF 1982 CSO NEEDS ESTIMATE

A. Introduction

A detailed discussion of the procedure, assumptions, and methods used to develop Category V needs estimates is reported in Appendix A of the 1982 Needs Survey report. This section summarizes the material presented in the main report including a discussion of the technologies considered in development of the Category V needs estimates.

If an adequate facility plan estimate was available for a given facility, this estimate was used as the basis for establishing Category V needs. Otherwise, Category V needs were established based on one of four control levels. The control level chosen was a function of the designated receiving water use for the receiving segment. The rare exception occurred when the estimated cost of sewer separation was less than the cost of the selected control level. In this case, the Category V needs for that facility were based on the cost of sewer separation. Both the control levels and the associated water use objectives are:

Level of Control	Generic Stream Use
Aesthetics	Navigation Agricultural Water Supply Industrial Water Supply
Public Health	Domestic Water Supply Partial Body Contact Recreation Noncontact Recreation
Fish and Wildlife	Warmwater Fisheries Coldwater Fisheries General Fish and Wildlife
Recreation	General Recreation Full Body Contact Recreation Shellfish Protection

The pollutant removal objectives and technologies used to develop Category V cost estimates for the four levels of control are described as follows:

1. Aesthetics. The objectives of the Aesthetics level of control are to remove floatables, coarse debris, and 40 percent of the annual BOD and SS load generated by a combined sewer system. The Aesthetics level is considered the minimum level of control.

Aesthetics level cost estimates are based on a least cost (optimum) mix of combined sewer flushing and a storage/treatment system utilizing physical/chemical treatment.

2. Public Health. The objective of the Public Health level of control is to remove 90 percent of the annual fecal coliform load generated by a combined sewer system.

   Category V Public Health level cost estimates are based on an optimum combination of CSO storage with pumping and chlorination of the discharge sized to capture and kill 90 percent of the fecal coliform bacteria generated by the combined sewer system. This level of control will also result in significant reductions in annual BOD and SS loads due to the sedimentation achieved in the storage facility.

3. Fish and Wildlife. The objective of the Fish and Wildlife level of control is to achieve and maintain a fishery in the receiving water. This level of control is based on removal of BOD and SS which may vary from 40 to 90 percent depending on the dry-weather pollutant contribution as well as background receiving water quality.

   The needs estimate is based on a mix of CSO control technologies as determined by an automated optimization procedure which accounts for site-specific conditions. Control technologies considered include streetsweeping, combined sewer flushing, and storage/treatment systems. The treatment options include five different levels of physical/chemical treatment as well as four different alternatives for modification, expansion, and upgrade of existing biological wastewater treatment plants. The optimization procedure selects the least costly combination of the above technologies that will achieve the desired degree of CSO pollution control.

4. Recreation. The objective of the Recreation level of control is to provide receiving water quality suitable for full body contact recreation as well as for a viable fishery. In addition to the pollutants removed for Fish and Wildlife, the Recreation level will provide for a 95 percent reduction in fecal coliform bacteria generated by the combined sewer system.

   Category V Recreation level cost estimates are based on an optimum combination of storage and treatment sized to capture and kill 95 percent of the annual CSO fecal coliform load. The treatment option used is the same as the treatment option selected for Fish and Wildlife. This ensures that BOD and SS removals required for fish and wildlife protection will also be obtained at the Recreation level.

B. CSO Control Technologies

As discussed briefly above, a wide range of CSO control technologies are considered in estimating Category V needs. These technologies can be classified as Best Management Practices (BMP) or structural controls. BMPs are characterized by low capital costs and high operation and maintenance costs. The BMPs considered in the 1982 Needs Survey include streetsweeping and combined sewer flushing. In both cases pollutants are removed from the combined sewer watershed and are, therefore, unavailable for washoff to the receiving water during rainfall/runoff events.

The structural CSO controls considered are wet-weather treatment systems which are required to collect the CSO at individual overflow points and to transport the intercepted flow to central storage facilities. Cost estimates for CSO storage include an allowance for aeration and for facilitating cleanout during dry weather.

Treatment options considered in the Category V needs estimating procedure include construction of new physical/chemical treatment facilities designed to treat CSO only, and modification, expansion, and/or upgrade of existing dry-weather biological treatment facilities designed to treat both dry-weather flow and CSO. A total of nine different treatment levels are considered. The first five levels are physical/chemical treatment systems and the remaining four levels are various dry-weather treatment system modifications. A summary of CSO control technologies considered in development of Category V needs estimates by level of control is summarized in Table B.

Grant applicants for the separate marine CSO correction fund are not limited to the CSO control technologies evaluated in the 1982 Needs Survey estimation of CSO control needs. A detailed study of site specific factors may recommend more appropriate and cost-effective technologies.

Table B
SUMMARY OF CSO CONTROL TECHNOLOGIES
USED TO CALCULATE NEEDS

Level of Control	CSO Control Technology					
	Streetsweeping	Sewer Flushing	Storage	Treatment[1]	Wet-Weather Interceptors	Sewer Separation
Aesthetics		X	X	X	X	
Public Health			X	X	X	
Fish and Wildlife	X	X	X	X	X	
Recreation			X	X	X	
Sewer Separation						X

[1] Treatment options include construction of new physical/chemical treatment facilities designed to treat CSO only and modification to existing dry-weather biological facilities designed to treat both dry weather and CSO. Physical/chemical treatment processes considered include microscreening, flocculation-sedimentation, dissolved air flotation, swirl concentrators, and high rate filtration. High rate filtration, the sewer flushing equipment, and the swirl concentrator are newly emerging CSO control technologies.

APPENDIX C

AVAILABLE PLANNING DOCUMENTS SUPPORTING POTENTIAL MARINE CSO NEEDS ESTIMATES

APPENDIX C

AVAILABLE PLANNING DOCUMENTS SUPPORTING POTENTIALLY MARINE CSO NEEDS ESTIMATES

A. Boston, Massachusetts

1. Kaufman, Herbert L. and Lai, Fu-hsiung. 1980. "Review of Alternatives for Evaluation of Sewer Flushing, Dorchester Area-Boston," EPA 600/2-80-118.

2. McGinn, Joseph M. 1978. "Analysis of Urban Stormwater Runoff and Combined Sewer Overflows in the Boston Metropolitan Area,' Metropolitan Area Planning Council.

3. Metcalf & Eddy, Inc. 1975. "Wastewater Engineering and Management Plan for Boston Harbor-Eastern Massachusetts Metropolitan Area, EMMA Study, Technical Vol. 7 Combined Sewer Overflow Regulation," for Metropolitan District Commission.

4. Metcalf & Eddy, Inc. 1976. "Wastewater Engineering and Management Plan for Boston Harbor-Eastern Massachusetts Metropolitan Area, EMMA Study, Main Report," for Metropolitan District Commission.

5. Proceedings, Third Session, Conference in the Matter of Pollution of the Navigable Waters of Boston Harbor and its Tributaries-Massachusetts, Environmental Protection Agency, October 1971.

B. Bridgeport, Connecticut

Watermation, Inc., and Kasper & Associates. 1978. "Facility Plan, City of Bridgeport, Connecticut Wastewater Collection and Treatment Facilities," for the City of Bridgeport, Connecticut.

C. Newport, Rhode Island

Metcalf & Eddy, December 29, 1971,"Summary Report, City of Newport, RI". Facility plan initiated by RI 4/24/74. Ron Wycoff of CH2M Hill was contact.

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